



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

24 OCT 1986

Honorable Lee M. Thomas
Administrator
U. S. Environmental Protection Agency
401 M Street, S. W.
Washington, D.C. 20460

OFFICE OF
THE ADMINISTRATOR

Dear Mr. Thomas:

In June, 1985, the Science Advisory Board was asked to review drafts of Agency guidance for the establishment of Alternate Concentration Limits (ACL) for RCRA facilities to protect human health and the environment. The review was assigned to the Environmental Engineering Committee. The Committee completed this review in March, 1986, and were asked at that time to review the final draft ACL guidance when it was ready for publication in the Federal Register.

The Committee received the final draft for review in July, 1986, and it is pleased to forward to you its report. The Committee finds that the final draft is well written, generally technically sound, and comprehensive. Additional case studies, however, were not provided for this review, and since much of the SAB's initial report dealt with these case studies (a critical element of the guidance), the Committee would like the opportunity to review them when they are revised and available.

The Committee appreciates the opportunity to carry out this scientific review and requests that the Agency formally respond to the attached report.

Sincerely,

Raymond C. Loehr

Raymond C. Loehr
Chairman, Environmental
Engineering Committee

Norton Nelson

Norton Nelson
Chairman, Executive Committee
Science Advisory Board

cc: J. Winston Porter
Marcia Williams
Vernon Myers
John Skinner
Terry Yosie

REPORT

on the review of

FINAL DRAFT ALTERNATE CONCENTRATION LIMIT GUIDANCE

by the

Environmental Engineering Committee
Science Advisory Board
U. S. Environmental Protection Agency

October, 1986

I. Introduction

The Resource Conservation and Recovery Act (RCRA) regulations require that the owner/operator of a hazardous waste disposal facility delineate any plume of contamination that has entered the ground water from a regulated unit. This includes identifying the concentration of each Appendix VIII constituent in the plume. If any of the hazardous constituents are present in concentrations which exceed established harmful concentration limits (defined as Interim Primary Drinking Water Standards) or background levels, then a corrective action plan must be submitted. The owner/operator is not required, however, to submit this plan if he can demonstrate that alternate concentration limits (ACL) at the point of compliance will protect human health and the environment.

EPA has been developing, for several years, guidance on how to determine these ACL's. In August, 1984, Dr. John Skinner, then the Director of the Office of Solid Waste, requested the Science Advisory Board (SAB) to review drafts of this guidance as soon as it was prepared by his Office, as well as several case studies demonstrating applications of the proposed guidance.

The Office of Solid Waste requested the SAB's Environmental Engineering Committee to perform a preliminary review of the guidance and to inform the Agency if there were any glaring problems which needed immediate resolution. The Committee responded to this request and forwarded its report (SAB-EEC-86-010) to the Agency in March, 1986. It was understood that a more complete review of the guidance would be performed when the Notice of Availability of the document was ready for publication in the Federal Register.

On July 23, 1986, Mr. Vernon Myers of the Office of Solid Waste sent the final draft guidance, entitled "Alternate Concentration Limit Guidance Based on 264.94(b) Criteria, Part I, Information Required in ACL Demonstrations," dated July 1985, to the Committee, and this report results from this latter review.

II. Review of Draft ACL Guidance Document

Overall, the report is well written, generally technically sound and comprehensive. The following comments include amplifications or reiterations of a SAB review of a previous draft of the document, as well as additional suggestions:

- A. The Committee is concerned that comprehensive surface water analysis receives too little emphasis relative to ground water analysis throughout the Guidance Document, although as indicated by one of the case studies previously reviewed, petitions can often rest upon surface water dilution or assimilation. For example, in Chapter VI, although "models, mixing zones, and dilution" are mentioned, "the selection of low flow rate, partitioning to suspended solids, benthos toxicity, resuspension of deposited solids, and transformation" are not addressed.

- B. The Committee's previously expressed concern for excessive degradation of ground water below the facility appears to be addressed by 1) reference to State regulations forbidding ground water degradation, in which case ACL's are inapplicable (page 1), and 2) the statement that (page E-10, top):

a facility must ensure that there are permanent prohibitions on the use of on-site ground water ... etc.

The Committee suggests that the Agency add the following clarification at the end of the above sentence:

"If future changes in the use of the ground water within the facility cannot be precluded, then the potential point of exposure to the ground water contaminants is assumed to be ... (to be filled in by the Agency)."

- C. Page E-10: "The point of exposure for surface water bodies is assumed to be the water body closest to the facility in the pathway of contaminant migration ... " The Committee advises the following addition:
- ", or the surface water body most seriously impacted by contaminant migration."
- D. In its previous review, the Committee objected to the term "All Agency published acceptable exposure limits." The final draft uses (page 1-5) "Agency-Reviewed dose levels." Although clarified later, the concept of peer-review or public comment could be expressed better as "Reviewed Agency" as the point to have them reviewed externally as well as internally. The Committee recognizes that this comment is generic to all Agency programs currently seeking a common basis for acceptable dose levels.
- E. Chapter 3 and Appendix 9 should reiterate that the site characterization information required for an ACL petition is the same as that already assembled for a Part B Permit Application, and that the hydrogeological assessments performed with this information should; 1) emphasize critical, sensitive aspects, and 2) allow for the use of conservative, worst case assumptions if requirements are still met under these conditions.
- F. Chapters III and IV: Although some discussion of nonstandard stratigraphy is included (pages 4-3 to 4-5), there should be more emphasis on conditions such as fractured rock and karst aquifers where standard techniques involving hydraulic conductivity and Darcy's law are wholly inappropriate. Perhaps one should follow the lead of the RCRA vulnerable hydrogeology criteria guidance (reviewed by the SAB) where it was indicated that these conditions are so poorly understood and difficult to model that TOT's, or in this case, ACL's simply cannot be reliably determined. A related, particular point: (page 4-3, top sentence): add: "... assuming relatively homogeneous aquifers."

- G. On page 4-8: Add a sixth criterion:
- "(6) Be calibrated and verified for the site before being applied in a predictive mode."
- H. Page 7-5 notes that: It must be shown that waste constituents will not mobilize hazardous species presently immobilized in the soil.... The discussions in Chapter 2 and Appendix 3 should refer to waste characteristics that can result in this, such as solvent character and ion exchange potential.
- I. Page 3-3: Note that dispersion and retardation do not reduce pollutant impacts on a mass basis, but rather spread them out or delay them, unless they occur along with degradation, in which case pollutant removal is enhanced.
- J. Page 7-1, second sentence: Consider future as well as current water use.
- K. Page 7-2: Note that groundwater is not suitable for use as boiler water without extensive treatment. Also, the domestic and municipal category should read "potable and others, such as bathing, and lawn/garden watering."
- L. Page 9-1, first paragraph: Consider reference to future as well as current local population.
- M. Minor textual and typographic suggestions:
- a. Data are always plural
 - b. Page 5-2, climate
 - c. Page 9-1, second sentence: add "if"